

REMARKS

In response to the above-identified Office Action, Applicants amend the application and seek reconsideration thereof. In this response, Applicants amend Claims 1-4. Applicants do not cancel or add any claims. Accordingly, Claims 1-8 are pending.

I. Specification

The Examiner objects to the disclosure for a misspelling in the specification. Per the Examiner's suggestion, Applicants amend the specification as indicated above. Accordingly, Applicants respectfully request approval of the amendment.

II. Claims Rejected Under 35 U.S.C. § 112

The Examiner rejects Claims 1-4 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the Examiner asserts that the specification does not describe how the intensity ratio set forth in Claims 1 and 3 is obtained. Applicants respectfully traverse this rejection.

Applicants acknowledge that intensity value does depend on the method of measurement or wavelength. However, the intensity ratio $I(110)/I(002)$ of the X-ray diffraction peaks does not depend on the method of measurement or the wavelength because the intensity ratio is calculated by dividing the intensity of the (110) plane by that of the (002) plane so that the factor effect is cancelled out in both the numerator (intensity of (110) plane) and the denominator (intensity of the (002) plane). As such, Applicants respectfully request that the rejection of Claims 1-4 be withdrawn.

The Examiner rejects Claims 1-4 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner asserts that the term "graphite-like" in Claims 1-4 is a relative term which renders the claims indefinite. Applicants amend Claims 1-4

as indicated above to overcome the rejection by replacing "graphite-like" with --graphite--.

Accordingly, Applicants respectfully request withdrawal of the rejection of Claims 1-4.

The Examiner rejects Claims 1 and 3 for the limitation of an intensity ratio less than 0.2 being relative and rendering the claims indefinite. Applicants respectfully traverse this rejection.

As discussed above, Claims 1 and 3 are both enabling and definite since one skilled in the art would recognize that the intensity ratio set forth in Claims 1 and 3 is independent of the method of measurement and wavelength. As such, Applicants respectfully request withdrawal of the rejection of Claims 1 and 3.

III. Claims Rejected Under 35 U.S.C. § 102/103

The Examiner rejects Claims 1-4 under 35 U.S.C. 102(e)/103(a) as being anticipated or alternatively obvious over U.S. Patent No. 6,139,990 to Kubota, et al. (hereinafter "Kubota"). Applicants respectfully traverse this rejection.

Applicants first note that in order to anticipate a claim, the relied upon reference must teach or suggest every limitation of the claim. Additionally, in order to render a claim obvious, the relied upon reference must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art.

Among other limitations, independent Claims 1 and 3 each recite a manner of preparing a negative active material (Claim 1, lines 6-14; Claim 3, lines 10-18). This manner of preparing is neither taught nor suggested by Kubota. As such, the negative active material of independent Claims 1 and 3 has inherently unique characteristics which are neither taught nor suggested by Kubota.

Accordingly, Applicants respectfully request withdrawal of the rejection of independent Claims 1 and 3. Claim 2 depends on Claim 1, and Claim 4 depends on Claim 3. As such, Claims 2 and 4 are neither anticipated nor obvious at least for the same reasons as Claims 1 and 3.

The Examiner rejects Claims 1-8 under 35 U.S.C. 102(e)/103(a) as being anticipated by and alternatively obvious over U.S. Patent No. 5,932,373 to Nagamine, et al. (hereinafter "Nagamine"). Applicants respectfully traverse this rejection.

Among other limitations, independent Claims 1, 3, and 5 each recite dissolving a coal tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom (Claim 1, lines 6 and 7; Claim 3, lines 10 and 11; Claim 5, lines 3 and 4). This limitation is neither taught nor suggested by the portions of Nagamine cited by the Examiner (Col. 5, line 53-Col. 6, line 19). Rather, the cited text suggests that quinoline may be a starting material. Applicants submit that the pitch is the starting material of independent Claims 1, 3, and 5, with the organic solvent being utilized to process the starting material. As such, Nagamine neither teaches nor suggests dissolving the pitch in an organic solvent to remove insoluble components therefrom. Necessarily, Nagamine cannot anticipate or render obvious independent Claims 1, 3, and 5.

Accordingly, Applicants respectfully request the withdrawal of Claims 1, 3, and 5. The claims which respectively depend on Claims 1, 3, and 5 are neither anticipated nor obvious for at least the same reasons as Claims 1, 3, and 5.

The Examiner rejects Claims 1-8 under 35 U.S.C. 102(e)/103(a) as being anticipated by and alternatively obvious over U.S. Patent No. 5,906,900 to Hayashi, et al. (hereinafter "Hayashi"). Applicants respectfully traverse the rejection.

Among other limitations, independent Claims 1, 3, and 5 each recite dissolving a coal tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom (emphasis added) (Claim 1, lines 6 and 7; Claim 3, lines 10 and 11; Claim 5, lines 3 and 4). The portion of Hayashi cited by the Examiner fails to teach or suggest using an organic solvent to remove insoluble components from the pitch (Col. 5, lines 9-29). Rather, Hayashi uses an organic substance to substitute the surfaces and fine pores of the graphite-like carbonaceous particles (Col. 5, lines 13-16), which is not the same as using an organic solvent to remove insoluble components from the pitch. Therefore, Hayashi can neither anticipate nor render obvious independent Claims 1, 3, and 5.

Accordingly, Applicants respectfully request the withdrawal of Claims 1, 3, and 5. The claims which respectively depend on Claims 1, 3, and 5 are neither anticipated nor obvious for at least the same reasons as Claims 1, 3, and 5.

IV. Claims Rejected Under 35 U.S.C. § 103

The Examiner rejects Claims 5-8 under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 5,721,071 to Sonobe, et al. (hereinafter "Sonobe"). Applicants respectfully traverse this rejection.

Among other limitations, independent Claim 5 recites dissolving a coal tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom (emphasis added) (Claim 5, lines 3 and 4). The portion of Sonobe cited by the Examiner discloses treating the heat-treated pitch with pyridine or quinoline to recover mesophase beads created by heat treating the pitch (Col. 2, lines 24-28). Nowhere does Sonobe teach or suggest dissolving the pitch in an organic solvent to remove insoluble components from the pitch. Necessarily, Sonobe cannot render Claim 5 obvious.

Thus, Applicant respectfully requests withdrawal of the rejection of Claim 5. Claims 6-8 are dependent on Claim 5 and are not obvious at least for the same reasons.

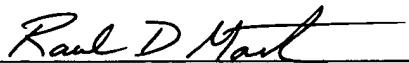
CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

Dated: March 6, 2001

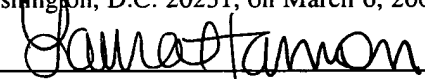


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CERTIFICATE OF MAILING:

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Laura Harmon March 6, 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend the claims as follows:

1 1. (Twice Amended) A negative active material for a lithium secondary battery, comprising a
2 [graphite-like] graphite carbon material having an intensity ratio $I(110)/I(002)$ of an X-ray
3 diffraction peak intensity $I(002)$ at a (002) plane to an X-ray diffraction peak intensity $I(110)$ at a
4 (110) plane of less than 0.2, the negative active material prepared by
5 dissolving a coal tar pitch or a petroleum pitch in an organic solvent to remove insoluble
6 components therefrom;
7 heat-treating the pitch at a temperature in the range of 400 to 450 °C for 4 hours or more
8 under an inert atmosphere to thereby produce at least 50 weight percent of mesophase particles
9 based on the pitch;
10 coking the pitch including mesophase particles;
11 carbonizing the coked pitch;
12 pulverizing the carbonized pitch; and
13 graphitizing the pulverized pitch.

1 2. (Amended) The negative active material of claim 1 wherein the [graphite-like] graphite
2 carbon material has an intensity ratio $I(110)/I(002)$ of less than 0.04.

1 3. (Twice Amended) A lithium secondary battery comprising:
2 a negative electrode comprising a negative active material;
3 a positive electrode comprising a lithium containing material that can reversibly intercalate
4 and de-intercalate lithium ion; and
5 a non-aqueous electrolyte;

the negative active material comprising a [graphite-like] graphite carbon material having an intensity ratio $I(110)/I(002)$ of an X-ray diffraction peak intensity $I(002)$ at a (002) plane to an X-ray diffraction peak intensity $I(110)$ at a (110) plane of less than 0.2 and the negative active material prepared by

dissolving a coal tar pitch or a petroleum pitch in an organic solvent to remove insoluble components therefrom;

heat-treating the pitch at a temperature in the range of 400 to 450 °C for 4 hours or more under an inert atmosphere to thereby produce at least 50 weight percent of mesophase particles based on the pitch;

coking the pitch including mesophase particles;

carbonizing the coked pitch;

pulverizing the carbonized pitch; and

graphitizing the pulverized pitch.

4. (Amended) The lithium secondary battery of claim 3 wherein the [graphite-like] graphite carbon material has an intensity ratio $I(110)/I(002)$ of less than 0.04.